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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,900	09/09/2003	Larry E. Fischer	IL-11082	5644
7590 06/30/2005			EXAMINER	
Eddie E. Scott Assistant Laboratory Counsel Lawrence Livermore National Laboratory P.O. Box 808, L-703 Livermore, CA 94551			TRIEU, THAI BA	
			ART UNIT	PAPER NUMBER
			3748	
DATE MAILED: 06/30/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,900

Applicant(s)

FISCHER ET AL.

Examiner

Thai-Ba Trieu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 8-15 is/are allowed.
6) ☒ Claim(s) 1-7 and 16-47 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 28 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance: See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Amendment filed on April 28, 2005. Applicant's cooperation in correcting the informalities in the drawings and specification is appreciated. Claims 1, 8, and 16 were amended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 16-17, 19, 21-22, 25, 26, 28, 30, 32, 33, 35, 38-45 and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Gadefelt (Patent Number 3,775,971).

Regarding claims 1-4, Gadefelt discloses a combustion engine apparatus, comprising:

a first stage piston engine (1) (See Figure 1),

fuel (via fuel pump 15) (See Figure 1);

means for combusting said fuel in said a first stage piston engine (1) in a first stage producing piston engine exhaust gases with said piston engine exhaust gases containing said fuel;

a second stage turbine engine (13) operatively connected to said first stage piston engine (1),

means for combusting said fuel (12) contained in said piston engine exhaust gases in said second stage turbine engine producing turbine engine exhaust gases; and

means for supercharging (22, 21, 23, 13) said first stage piston engine (1) using said turbine engine exhaust gases; said means for supercharging (22, 21, 23, 13) said stage piston engine (1) comprising means for directing (via line 25 to line 9) said turbine exhaust gases from the second stage turbine engine (13) into said first stage piston engine (1);

wherein said piston engine is a diesel engine (See Column 1, Lines 13-18);

wherein said piston engine (1) is a compression ignition engine, a homogenous charged compression ignition engine, a variable compression engine, a nitrogen enriched air combustion engine, a rotating engine, a linear engine, and/or a reciprocating engine (See Figure 1);

wherein said means for combusting (12) said fuel contained in said piston engine exhaust gases in said second stage turbine engine includes compressor means (22) for providing compressed air to said second stage turbine engine (via 16) for combusting said fuel contained in said piston engine exhaust gases (See Figure 1).

Regarding claims 16-17, 19, and 21-22, the method as claimed would be inherent during the normal use and operation of Gadefelt device as disclosed in the

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rejection of claims 1-4 (See Figure 1, Abstract, Columns 1-4, lines 1-67, and Column 5, lines 1-46, and Column 6, lines 1-6).

Regarding claims 25-26, 28, 30, 32-33, 35, 38-45, and 47, Gadefelt further discloses said step of using said turbine engine exhaust gases to supercharge said piston engine comprising:

using said turbine engine exhaust gases to drive a compressor (22) that supercharges said piston engine (1) (See Figure 1);

using said compressor (22) to provide compressed air to said turbine engine (via 16) for said the step of combusting said fuel contained in said piston engine exhaust gases in a second stage turbine engine (See Figure 1);

said piston engine (1) being a compression ignition engine and wherein excess air is added in said turbine engine is increased to ensure that all hydrocarbons and particles are burned (See Column 3, lines 29-67, Column 4, lines 1-67, and Column 5, lines 1-17);

said step of combusting said fuel in a piston engine in a first stage being combusted with an oxidizer stream (air intake);

said step of combusting said fuel contained in said piston engine exhaust gases in a second stage turbine engine stage is combusted with an oxidizer stream; wherein said oxidizer stream is air (See Figure 1); and

said step of combusting said fuel in a piston engine in a first stage and/or said step of combusting said fuel contained in said piston engine exhaust gases

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in a second stage turbine engine stage is combusted with an oxidizer stream (See Figure 1);

said steps of combusting take place to perform work and to provide heat;

wherein said heat is used for a furnace; for a boiler; for a smelter; and for an Otto engine;

the step of providing a bypass valve (28) placed in front of said piston engine to assist starting and acceleration of said piston engine (See Figure 1);

the step of providing direct fuel injection into said turbine engine to assist starting and acceleration of said piston engine (See Figure 1); and

the step of providing a mixing device (a portion of 12 where the exhaust gases coming out of 10 and mixing with the air coming out 16) between said piston engine exhaust and said turbine engine entrance to make a well-stirred fuel and oxidizer stream into said turbine engine (Figure 1).

Note that the recitations of said heat being used for a furnace; for a boiler; for a smelter; and for an Otto engine are considered as intended use. Note that in claims 40-43, lines 1-2, the limitation of ***“said heat being used for a furnace; for a boiler; for a smelter; and for an Otto engine”*** is an intended use recitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to process of using, the

intended use must result in a manipulative difference as compared to the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCCPA 1963).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 and 36-37 are rejected under 35 U.S.C. 103(a) as obvious over Gadefelt (Patent Number 3,775,971), in view of Marin et al (Pub. Number 2003/0101725 A1).

Gadefelt further discloses said fuel being oil, methane, natural gas, ammonia, alcohols and/or ethers; said fuel is any combustible matter including fossil fuels (oil, natural gas, coal, etc.) inorganic fuels (ammonia, hydrazine, calcium, etc.) and/or organic fuels (alcohols, ethers, wood, etc.) (Read as fuel by the definition. Fuel is a material that is burnt to release heat energy, i.e. coal, oil, or uranium (McGraw-Hill Dictionary of Science and Engineering, Third Edition, 1984).

However, Gadefelt fails to specifically disclose organic fuels, inorganic fuels, and/or combustible matter.

Marin teaches that it is conventional in the power plant art, to utilize any combustible matter including oil, coal, methane, natural gas, and/or inorganic fuels including ammonia, hydrazine, calcium, and/or organic fuels including alcohols and/or

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ethers; any combustible matter including fossil fuels inorganic fuels and/or organic fuels (See Column 3, lines 56-62).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized organic fuels, inorganic fuels, and/or combustible matter, as taught by Marine, to improve the efficiency and to reduce emissions of the Gadefelt device.

Claims 18, 23, 29, and 46 are rejected under 35 U.S.C. 103(a) as obvious over Gadefelt (Patent Number 3,775,971), in view of Melchior (Patent Number 4,233,815).

Gadefelt further discloses the invention as recited above; however, fails to disclose the step of combusting said fuel in a homogenous charged compression ignition engine; the step of combusting said fuel in a compression ignition engine having heterogeneous combustion resulting in said fuel in said piston engine exhaust gases being at stoichiometric conditions; said piston engine being a spark ignition engine being operated fuel rich to suppress engine knock; and a starter to said turbine engine to start said turbine engine and said piston engine.

Melchior teaches that it is conventional in the supercharged internal combustion engine art, to utilize step of combusting said fuel in a piston engine in a first stage comprising combusting said fuel in a homogenous charged compression ignition engine (See Column 1, Lines 26-67, Column 2, lines 1-6, Column 3, lines 63-68, and Column 4, lines 1-16); said piston engine being a spark ignition engine that is operated fuel rich to

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suppress engine knock (See Column 29, lines 40-50); and the step of providing a starter (300) to said turbine engine to start said turbine engine and said piston engine (See Figure 14).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the step of combusting said fuel in a homogeneous charged compression ignition engine; the step of combusting said fuel in a compression ignition engine having heterogeneous combustion resulting in said fuel in said piston engine exhaust gases being at stoichiometric conditions; said piston engine being a spark ignition engine being operated fuel rich to suppress engine knock; and a starter to said turbine engine to start said turbine engine and said piston engine, to improve the Gadefelt engine.

Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadefelt (Patent Number 3,775,971), in view of Becker et al. (Patent Number 6,089,855).

Gadefelt discloses the invention as recited above; however, Melchior fails to disclose the stoichiometric conditions at reduced combustion temperatures where NO_x is difficult to form; and the residence time of combusting said fuel to ensure that all hydrocarbons and particles are burned.

Becker teaches that it is conventional in the power plant art, to utilize combusting said fuel contained in said piston engine exhaust gases in a second stage turbine engine occurring at or near stoichiometric conditions at reduced combustion

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temperatures where NO_x is difficult to form; and the residence time of combusting said fuel contained in said piston engine exhaust gases in said turbine engine being increased to ensure that all hydrocarbons and particles are burned (See Figure 1, Abstract, Column 8, lines 1-8, and Column 9, lines 34-46).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the stoichiometric conditions at reduced combustion temperatures where NO_x is difficult to form; and the residence time of combusting said fuel to ensure that all hydrocarbons and particles are burned, as taught by Becker, to reduce exhaust emissions of NO_x combustion products.

Claims 31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadefelt (Patent Number 3,775,971), in view of either Anne Stark: "New Power Plant Combustion Model Lowers Pollutant Emissions at Affordable Cost" (EUREKALERT, On Line, http://www.eurekalert.org/pub_release/2002-04/dlnl-npp042902.php), or Sekar et al. (Patent Number 5,526,641).

Gadefelt discloses the invention as recited above; however, Melchior fails to disclose said oxidizer stream being nitrogen-enriched air.

Anna Stark/Sekar teaches that it is conventional in the power plant art, to utilize said oxidizer stream being nitrogen enriched air (See the entire document of Anna Stark, or Abstract, Figure 1 of Sekar).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized said oxidizer stream being nitrogen enriched air, as taught by Anna Stark/Sekar, to reduce pollutant emissions in the environment.

Allowable Subject Matter

Claims 8-15 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art fails to disclose or renders obvious the claimed combination of a combustion engine apparatus including:

"means for directing said exhaust gases from said second stage turbine engine into said supercharger".

Response to Arguments

Applicant's arguments with respect to claims 1-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Dae Sik Kim (US Patent Number 3,513,929) discloses low polluting engine and drive system.
- Mitsubori (US Patent Number 5,327,725) discloses an exhaust gas recirculation system for a turbocharged engine.

- Blake (US Patent Number 6,050,095) discloses a turbocharger with integrated exhaust gas recirculation pump.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
June 24, 2005



Thai-Ba Trieu
Primary Examiner
Art Unit 3748



Approved by Examiner
TTB
06/23/05

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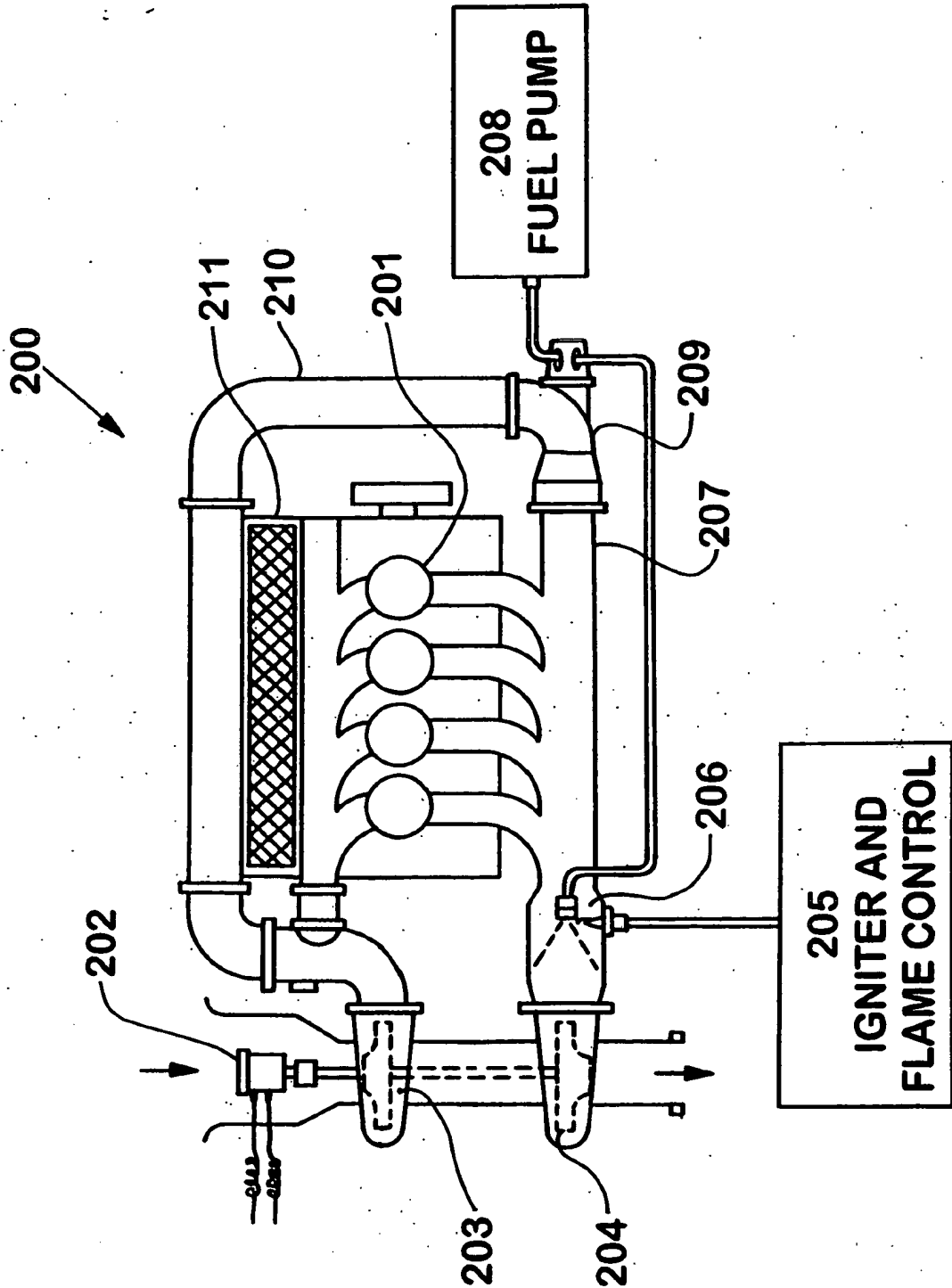


FIGURE 2